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THE INFLUENCE OF SUGGESTION ON IMAGINATION

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Introduction.—It is generally known that the imagination may be set working along certain paths by suggestive influences. These influences may be either internal or external. They are internal when they take the form of a recollection or organic sensation. They are external when they are initiated from without—when they reach consciousness in the form of an idea, perception or sensation externally induced. Thus a man may cross a bridge before he comes to it, but not till something in the road suggests the idea or reminds him of the bridge ahead. Or one may hear the clang of fire engines and thereupon begin to picture to one's self an exciting fire-scene. A mere word, a phrase or name on a printed page may also suffice to switch the mind over to a passive train of thought. In this sense it is possible for an external situation to arouse a particular train of imagination. This being so, the question arises: first, to what extent can external influences start the imaginative process; and secondly, do they increase or decrease the range or fertility of imagination?

It is obvious that these questions have a significant bearing on certain sociological and pedagogical problems. Imaginative ideas are the threads out of which the texture of active life is spun. A considerable portion of the pedagogy of play is based on the above proposition. It is assumed that by skillfully controlling the child's games, as by placing certain toys in his hands, the kind of ideas that shall occupy his mind can be determined beforehand. These ideas gradually form a habit of thought; and this, of course, is the basis of every career good or bad.

It is out of a desire, therefore, to discover (1) To what extent can suggestion control or direct imagination? and (2) Is suggestively induced imagination more or less fertile than free imagination? that the following experiment was undertaken.

Method of Procedure.—The advisability of using ink-blots in tests of imagination has already been demonstrated by G. Dearborn, Kirkpatrick, Sharp and others.¹ In this experiment, therefore, these blots were used under the following conditions: In one instance five ink-blots, properly marked, were distributed among five individuals. The observers were told that on a given signal each one was to pick up the blot before him, hold it in one position, and endeavor to see how many things or objects he could discover in it—"in the same way as one sees things in clouds." The time allowed for looking at each blot and writing down the results simultaneously, was one minute. Then the blots were passed from one subject to the other till the five of them had made the round. In this manner twenty-five judgments were obtained in about fifteen or twenty minutes.

After that another set of ink-blots was distributed among the five observers, but this time each blot was accompanied with a picture post-card. The subjects were now given the following instruction: "You have before you an ink-blot and a picture post-card, each of them turned upside down. At a given signal you are to look at the picture post-card for 15 seconds and try to saturate your mind with its contents. When the 15 seconds are up, I shall say 'down;' and you are to turn the post-card down again and try to think of its contents for 20 seconds. At the end of this interval I shall say 'now' and you are to pick up the ink-blot, hold it in one position, and endeavor to see how many things your imagination can discover in it, as in the former case. This you will do for a period of one minute during which time you must also write down your results. When the minute is up I shall give you a signal to lay down your ink-blot, but you may finish writing your introspection if you happen to be so engaged at the time." This done the ink-blots were then passed in one direction and the picture post-cards in the opposite direction. In this manner each of the five blots was combined with each post-card, while no observer saw either the same blot or the same card more than once. Perhaps a simpler method would have been to keep the same ink-blot and picture card together all the time and have both of them pass from observer to observer. But unless a very large number of tests are made, this method may give rise to a serious error, i. e., it may be that some ink-blot should have a figure on it which corresponds to the accompanying picture

¹ See Whipple, *Manual of Mental and Physical Tests*, pp. 429-457.

post-card or some portion of its content. The possibility of such chance occurrence I tried to avoid for reasons presently to be explained. Needless to say the position in which the ink-blots were to be held was indicated by a mark and was uniformly maintained by all observers.

The object of presenting the ink-blots alone, as in the first instance, was to obtain a measure or an index of free imagination; for it is known that ink-blots thus presented serve to measure the fertility as well as type of imagination.² The reason for presenting picture post-cards together with ink-blots, as in the second instance, was to see whether the contents of the former exerted any influence on the imaginative products of the latter. If they did—if, for instance, the saturating of one's mind with the picture of a dog caused one to see a dog in the accompanying ink-blot more frequently than without previously looking at such a picture, then it would show that suggestion can direct the process of imagination.

Sometimes the tests were begun with controlled imagination first, i. e., ink-blots with picture post-cards were first passed around, then ink-blots alone. At other times the order was reversed. My observers, three of whom were women and two men, came to me once a week.³ They did not know the purpose of the investigation at first, but toward the end of the third week they declared that they thought the object of the tests was to see whether they would discover the same things in the ink-blot that they had seen in the picture post-card immediately before. This, of course, is unfortunate; for it is difficult to say whether the product of the controlled imagination was genuine, that is to say, whether it was due to the unconscious suggestive influence of the picture post-card seen immediately before, or due to the wish and the conscious effort of the observer to see the very same thing in the ink-blot that had been seen in the preceding picture card. I instructed my observers that they were not to make a conscious effort to do that—that they were to give free rein to their imagination whether preceded by a picture post-card or not. All of them declared that they carried out my instruction—that wish or desire played no influence in their judgments.

In this manner I obtained two sets of results. The first represented free, or uncontrolled imagination. The second

² Whipple, *Op. cit.*

³ For participating in these tests, I thank Mr. and Mrs. I. L. Cohen, Miss Sarah Harrison, Miss Helena Rosenthal and Mr. Leon Silver.

externally controlled imagination, or imagination under the influence of suggestion. Let us see what the differences were.

Treatment of Data.—Certain arbitrary rules had to be laid down for the computation of the data. It is not enough merely to count the number of judgments rendered in each instance. The complexity of the judgment must also be taken into consideration. Thus a judgment like "A chicken" or "A dog's head" is not worth as much as a judgment like "A bird flying" or "A man riding a buffalo." Accordingly the judgments were treated on the basis of the nouns, verbs and descriptive adjectives they contained. The following table shows the frequency of these elements in the products of imagination with and without suggestion. They serve as an index to the fertility or range of imagination.

TABLE I
FERTILITY OF IMAGINATION AS DETERMINED BY COMPLEXITY
OF JUDGMENTS

	Without suggestion	With suggestion
Nouns given.....	83	62
Verbs given.....	22	12
Descriptive-adjectives.....	17	11
Total.....	122	85

The number of trials in each case was the same, of course. My protocol further shows that out of the 57 trials to discover imaginary figures in the ink-blot under the influence of suggestion, only 14 judgments bore any relation to the picture post-cards seen immediately before. That is to say, the imagination was influenced and directed into definite channels by externally induced mental contents in 24.5 per cent of the cases.

On the other hand, the above table shows that in these 57 trials the imagination encompassed 122 ideas without suggestion and only 85 with suggestion. This means that there was a loss of 29.4 per cent in the range or fertility of imagination when it functioned under the influence of previously induced suggestion.

Moreover, there were 60 distinct judgments rendered in imagination without suggestion, and as these comprised 122 ideas it means that each judgment embraced on the average 2 ideas. There were 49 distinct judgments in imagination with suggestion, and as these comprised only 85 elements, or 1.7 per judgment, we have further proof that suggestion tends to diminish the fertility of imagination.

Another fact which indicates that suggestion or the attempt to direct the process of imagination diminishes the range thereof, is that out of the 57 trials with suggestion there were 13 nil cases, i. e., there were 13 instances when the observers were totally unable to discover a figure or any meaningful object in the ink-blot, whereas there were only 5 zero cases in the free or uncontrolled imagination.

Suggestion is usually defined as the "belief in an idea" or as the "acceptance of an idea as real and the dismissal of the opposite idea as unreal."⁴ In other words, suggestion is the induction of an idea or motive or wish or impulse to motor activity which activity would not exist either in a potential or kinetic state under normal conditions. Therefore before we can say definitely whether those products of the imagination which correspond to the contents of the picture post-cards are really due to the suggestible influence of the post-cards or are mere coincidences, we must determine to what extent those products or products of the least resemblance to them, appear in the results of the uncontrolled imagination, i. e., under "normal conditions."

The following table represents (1) the cards—marked A, B, C, etc.—that "influenced" the imagination at least once out of 4 or 5 trials.⁵ (2) The second column shows the number of times that an object corresponding to the picture post-card was seen in the 4 or 5 ink-bLOTS associated with it. (3) The third column gives the number of times that a similar object was seen in all 57 trials of *free* or *uncontrolled* imagination.

TABLE II
THE PROBABILITY THAT THE POSITIVE PRODUCTS OF CONTROLLED
IMAGINATION WERE DUE TO SUGGESTION AND NOT
TO COINCIDENCE

Suggestive cards that were effective	No. positive judgments in 4 or 5 trials	No. similar judgments in 57 trials free imagination
A.....	1	0
B.....	2	0
C.....	1	0
D.....	1	0
E.....	3	2
F.....	2	0
G.....	3	5
H.....	1	1

⁴ Münsterberg, *Psychotherapy*, p. 100.

⁵ At some of these tests only four subjects were present.

The foregoing figures show that there were three distinct occasions when the products of suggested imagination appeared in free imagination. But it should be borne in mind that the proportion in which they appeared in the controlled condition is much greater than in the uncontrolled. Thus one object (a dog) was seen 5 times in the 57 trials of free imagination. This is in the ratio of about 1:11. But the same object appeared 3 times out of 4 trials when the four observers first looked at the picture of a dog and then at the *four different* ink-blots. The ratio in this case is therefore about 9:12. Hence we may say that even this item, for the imaginative construction of which there seems to exist a natural proclivity, appears about 9 times as often under the influence of suggestion as in free imagination.

The description of a few cards and the products of the corresponding acts of imagination may show better than figures whether suggestion exerted any positive influence.

Card A: Yellow Easter card, three egg-shells, chicks crawling out of them. Object seen in associated ink-blot: "Contents of broken egg."

Card B: Christmas card, pine trees, horse and sled driving up road, two dogs facing horse. Objects seen in associated ink-blot: (1) Christmas tree, (2) Dog's head facing horse's head."

Card C: Easter lilies. Product of imagination: Flowers.

Card D: Two young dogs taking bath. Product of imagination: "Two dogs playing."

Card E: Pond with two ducklings on it, one swimming, other attempting to fly. Product of imagination: (1) Aquarium. (2) Bird flying. (3) Young chicken pecking.

Card F: Light house flashing in dark sky. Product of imagination: (1) Burning torch. (2) Light house turned upside down.

But the fact that the products of suggested imagination seldom appear in free imagination is not conclusive proof that they are entirely due to suggestion, for it is quite possible that the products of free imagination itself are equally seldom repeated. To settle this doubt I examined at random 20 products of the 57 attempts at free imagination in order to see whether any of them appears among the 56 remaining ones, and if so, how often?⁶ The following table gives the results.

⁶ Actually there were 52 successful trials, since 5 of the 57 were nil.

TABLE III
FREQUENCY WITH WHICH PRODUCTS OF FREE IMAGINATION
WERE REPEATED IN ORIGINAL OR COGNATE FORM

Product No.	Times repeated in 56 trials	Product No.	Times repeated in 56 trials
1	9	11	5
2	2	12	1
3	1	13	1
4	0	14	9
5	2	15	9
6	9	16	1
7	2	17	3
8	0	18	5
9	9	19	7
10	9	20	0

Out of the 20 items only 3 failed to find repetition, whereas 7 of them were repeated 5 or more times in 56 trials. This shows that free or undirected imagination tends to move in a closed circle. In order to examine this phase of the problem more closely, all judgments of free imagination (nouns alone) were grouped in classes of kind or species. Then the judgments of suggested imagination were examined on the same basis. The groups into which they fell were as follows: (1) Man, (2) Bird, (3) Horse, (4) Dog, (5) Fish, (6) Plants, (7) Other animate things, (8) Other inanimate things. As there was repetition of both types of imaginative products in the first six classes, these were eliminated. The last two classes were then analysed. They contained (1) as products of controlled imagination, 21 distinct objects; (2) as products of free imagination, 23 objects, but as five of these were repeated two or more times, there were only 15 distinct items. This is further proof that free imagination tends to move in a limited area. That the extent of this area is determined by the mass experiences of the observers there can be no doubt. Dearborn makes a similar suggestion, when he says "that at least in mature subjects, the results of the ink-blot tests are conditioned . . . by habits of living, occupation, and other environmental factors."⁷ In the light of these facts we shall have to revise the conclusion drawn from Table I; instead of saying free imagination is more fertile than directed imagination we shall have to say, it is more productive or more active, but its relative versatility depends upon the variety of the suggestive stimuli used in the controlled imagination.

The items that were repeated most often in free imagination

⁷ As quoted by Whipple, *Op. cit.*, p. 434.

are, in the order of frequency, "man," "man on horse or horse alone," and "dog." It is advisable, therefore, not to use pictures that contain such figures as these as stimuli of suggestion. For if the resulting product of the imagination should correspond to the content of the picture, one would not be able to tell off-hand whether it was due to suggestion or to the natural tendency of the observers to imagine such items as "men," "horses" and "dogs" in ink-blots.

To remove that difficulty or anything analogous to it, recourse was had to suggestion-stimuli that were extremely particular and concrete in nature and none of which had appeared even once in the 122 products of free imagination. These stimuli were pictures of merchandise cut out of a trade journal. They included such items as an office desk, a bed, a clock, a chair, a stove, and so forth. Thirty tests were made with them, but only in two instances was there partial correspondence between the object imagined in the ink-blot and the figure seen immediately before. Moreover, 12 of the 30 trials gave nil results. That is to say, the observers found it very difficult to see anything at all in the ink-blots when they first saturated their minds with these merchandise figures. When asked to give their reasons, they declared univocally that the figures were too concrete, that they imparted no meaning outside of themselves. Whence it appears that the more particularized the suggestive stimulus the more does it narrow the range and productivity of imagination. This phenomenon, however, needs further investigation before it can be definitely established. Our figures, scanty as they are, seem to justify the following conclusions:

(1) Visually induced suggestion can direct visual imagination about 24.5 per cent of the time.

(2) Such suggestive stimuli tend to diminish the fertility (productivity) of the imagination about 29.4 per cent of its normal range.

(3) Such suggestive stimuli also tend to diminish the fertility of imagination as determined by complexity of individual ideas.

(4) The more particularized the suggestion the more does it tend to diminish the fertility of imagination.

Concluding Remarks.—It may be interesting to see what light these facts throw on certain educational and sociological problems.

In the first place, the question may be raised whether it is

advisable to direct the mind in a strict and narrow path? We see that positive results in "ideal construction" are obtained in only a fraction of the instances with previous direction, while on the other hand, mental power as measured by fertility is diminished. Does not this experiment bear out the oft-repeated statement that too much specialization narrows a man, diminishing his resourcefulness and making him helpless in the presence of new situations? Our results show that by controlling the constructive power of the mind more is lost in extension than is gained in intension.

This experiment also seems to support the general belief that the country raises the healthiest-minded children—the poets and presidents. The reason would seem to be something as follows: The ideational stimuli that impinge on the mind of the city child are too concrete, too particularized. Consequently the productivity of that child's imagination is diminished. The country child, on the contrary, receives suggestive stimuli that are vague and indefinite in form—such as broad plains, thick forests, unbroken skies, floating clouds, placid pools and running brooks. These stimuli, instead of acting like the picture post-cards—as directives of imagination—function rather like the ink-blots, i. e. they impregnate the imagination, giving it free play and inviting it to read into them whatever it pleases. Not so with the objects of the city—such as brick houses, clanging fire engines, shrill noises, chaotic mobs, rumbling wagons, grating trolley cars and buzzing automobiles—these things are too particular, too concrete in nature to invite the free play of the imagination. They function like the pictures of merchandise which I used in my last test. Apart from breaking in on the quiet play of imagination, owing to their multiplicity and inherent vividness, they lack the power to suggest anything outside of themselves.

But on the other hand, because of their multiplicity these stimuli awake in the mind of the city child a greater variety of distinct ideas than the country child ever experiences. Hence the apparent versatility of the former in contradistinction to the simplicity of the latter. Nevertheless, the suggested ideas, as we saw, are not as rich in complexity as those which result from free imagination. And this explains the general superficiality of the city child, notwithstanding his versatility, as contrasted by the deeper albeit simpler mind of the country child.

Again, the question arises as to who profits most from his toys—the rich boy whose playthings are the miniature reproductions of the concrete things that occupy the minds

of mature persons, or the poor lad whose toys, as a rule, hardly bear the least resemblance to the things which he makes them represent in his own childish life? According to the results of our experiment it would be the latter. For example, the rich boy who has a real rocking horse cannot experience half the range or variety of imaginative products that the poor boy who uses a broom stick for a horse must experience. The reason is that in the former case the rocking horse is too representative in form of a real horse, and this close resemblance must bring it to the consciousness of the youngster that after all it is a dead horse. Thus his illusion is spoiled. But the boy who uses a broom-stick for a horse, seeing no too great resemblance between the symbol and the object it stands for, is in no danger of being disillusioned, and so he gives himself up to the play of his imaginative ideas freely and enthusiastically.

Still the value of free imagination must not be overrated. For we have seen that its fertility is not always real, since it repeats itself and moves in a circle the radius of which is determined by the individual's experience and environment. The derivation of the best type of inventiveness or imaginative power, therefore, would seem to be a psychological problem in maxima and minima.

From a sociological point of view these results show most clearly the prodigious influence of environment on mental development. If ordinary picture post-cards can direct the process of imagination in about 25 per cent of the cases, how much more so must this be done by those active, living influences which carry an emotional complex with them? The sound of martial music or the break of the ocean waves, the presence of this or that type of man or woman, the association with business men or with scholars—any one of these or similar influences, if persistent enough, is bound to fill the mind with a specific type of ideas and images, which ultimately must determine the mode of life and career of the affected individual, especially in his formative years. However, the fact that about 25 per cent of the products of imagination can be determined by suggestion does not necessarily say that about one quarter of our rational life is also controlled by external influences. For it must be remembered that the social influences are multifarious and diverse in kind. Hence it is not at all unlikely that, like the myriads of chemicals that fill the ocean, they become neutralized in their effect upon us. This, however, will depend upon the state of civilization in the given community.